KV-9300

US Model

Chassis No. SCC-170A-A

TRINITRON® COLOR TV

SPECIFICATIONS

Television System:	American TV standards
Color System:	NTSC
Picture Tube:	22 cm, 9" (screen measured diagonally), 90° deflection TRINITRON system
Semiconductors:	29 transistors, 1 FET, 5 ICs and 25 diodes
Antennas:	VHF: 300 Ω balanced 75 Ω unbalanced (telescopic antenna) (including slide switch) UHF: 300 Ω balanced (loop antenna*) * Note: Supplied with accessories
Channel Coverage:	VHF channels: 2 – 13 UHF channels: 14 – 83
Intermediate Frequencies:	Picture i-f carrier: 45.75 MHz Color subcarrier: 42.17 MHz Sound i-f carrier: 41.25 MHz
Sound System:	4.5 MHz intercarrier Output power: 1 W max. Speaker: 8 cm (3¼ inches) dia, 8 Ω
Video System:	R, G, B cathode drive
Automatic Controls:	ABL (automatic brightness limiter) ACA (automatic color attenuator) ACC (automatic color control) ACK (automatic color killer) ADG (automatic degaussing) AFC (automatic frequency control) AFT (automatic fine tuning) AGC (automatic gain control) ANC (automatic noise canceller) AVR (automatic voltage regulator) AZC (automatic zooming control)
Anode Voltage:	22 kV at zero beam current
Power Requirements:	120 V ac, 60 Hz
Power Consumption:	75 W ac (max), 55 W (average)
Dimensions:	Approx. 262 (w) x 321 (h) x 359 (d) mm 10¼ (w) x 12⅝ (h) x 14⅛ (d) inches
Net Weight:	Approx. 8 kg (17 lb 10 oz)
Accessories Supplied:	Earphone (ME-20B) UHF loop antenna (AN-15) Instruction manual

WARNING!!

TO ELIMINATE SHOCK HAZARD AND PROTECT EQUIPMENT WHEN SERVICING THE SET WITH THE COVERS REMOVED, MAKE SURE THAT THE SET IS PLUGGED INTO A SUITABLY-RATED ISOLATION TRANSFORMER.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND ⚠ MARK ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

SONY®

SERVICE MANUAL

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).
   Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60–100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

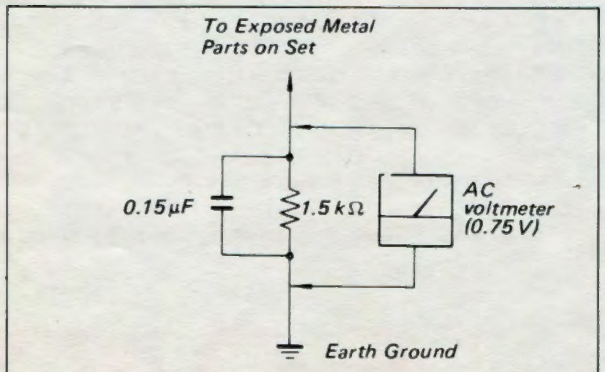


Fig. A. Using an AC voltmeter to check AC leakage.

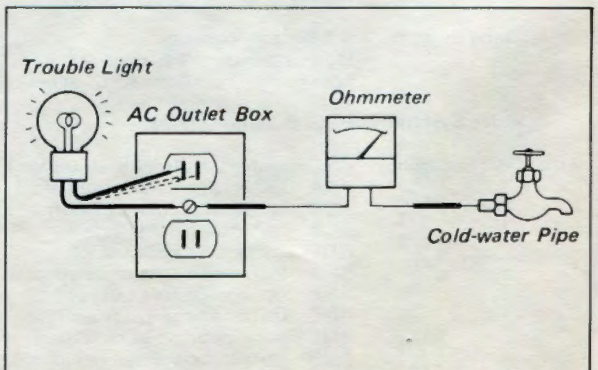
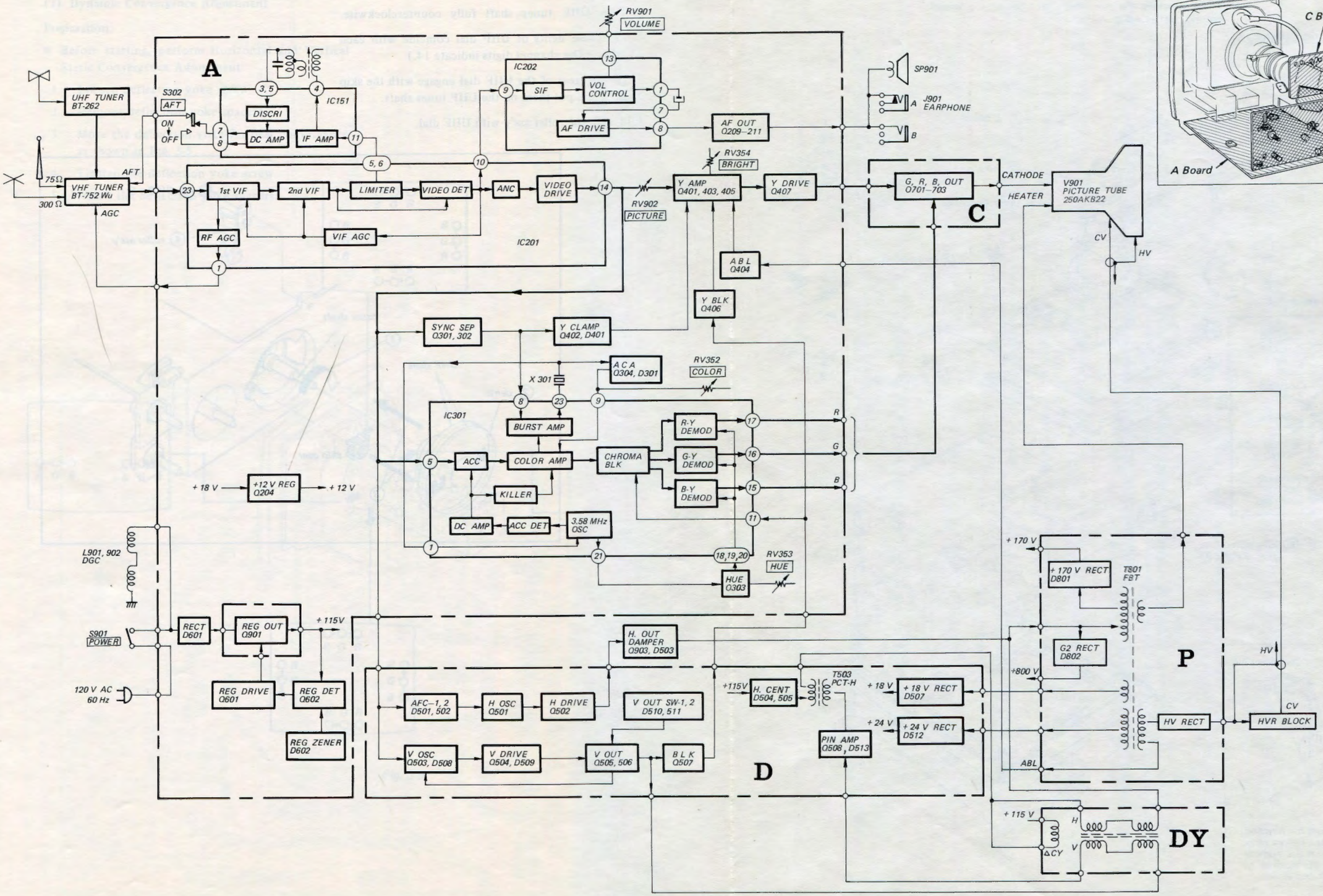


Fig. B. Checking for earth ground.

SECTION 1
BLOCK DIAGRAM

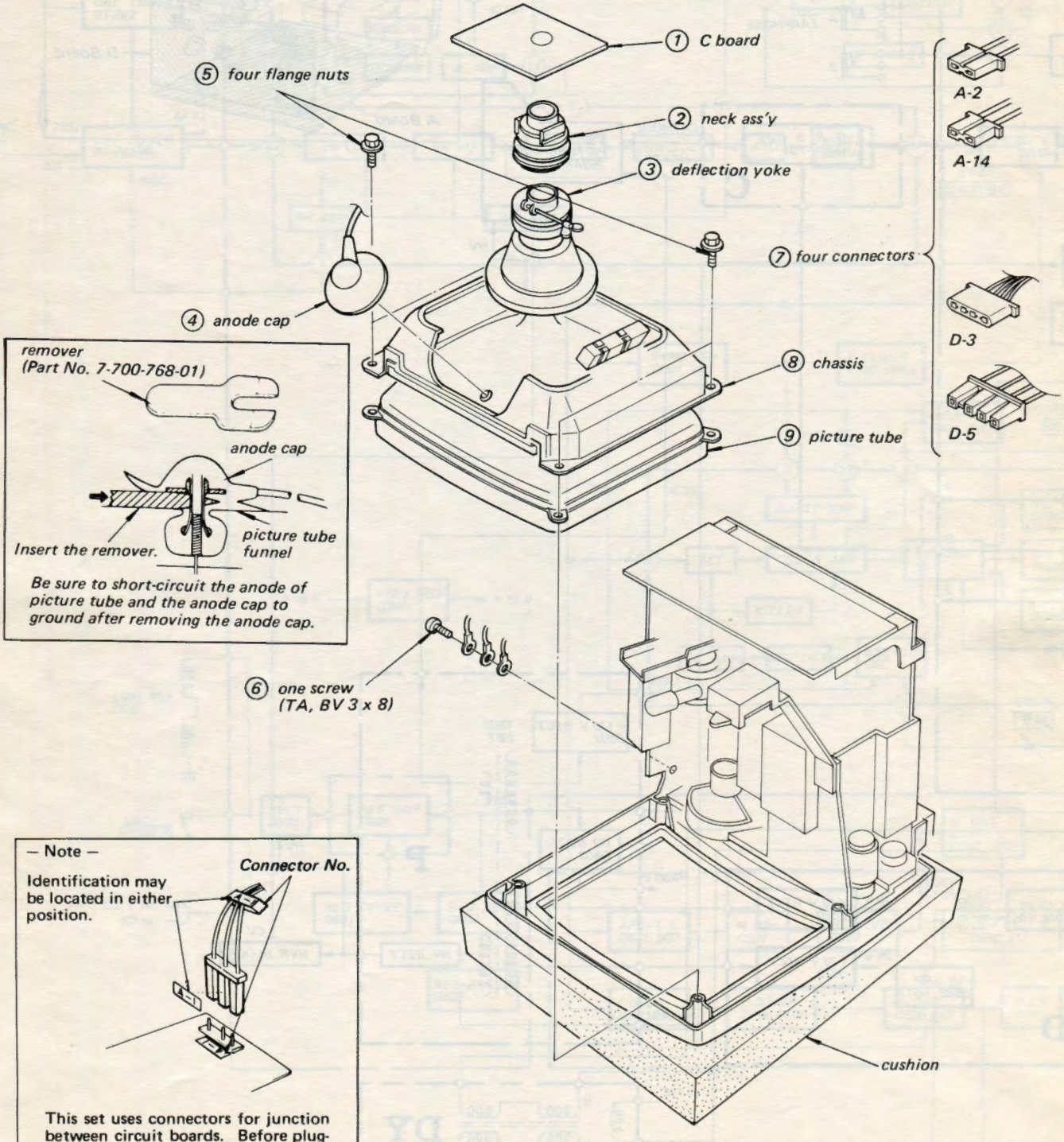


CIRCUIT BOARDS LOCATION

SECTION 2
DISASSEMBLY AND REPLACEMENT

- Follow the disassembly procedure in the numerical order given.
- When removing the rear cover, take out all the screws around marked ⇒ on it.

2-1. PICTURE TUBE REMOVAL



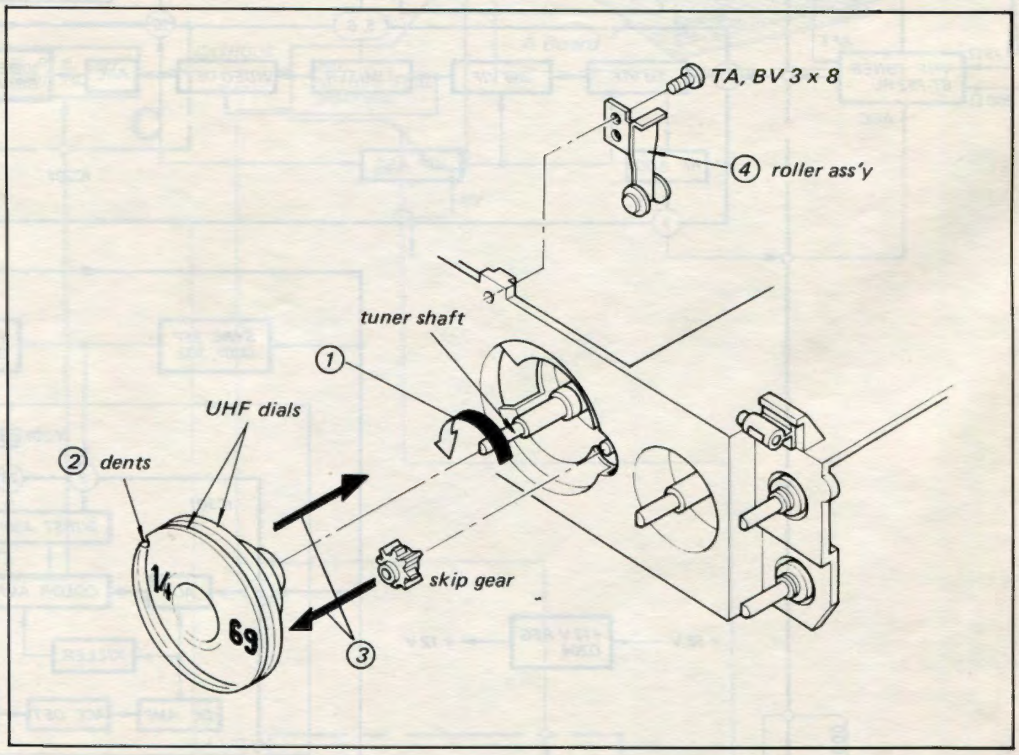
– Note –

Identification may be located in either position.

This set uses connectors for junction between circuit boards. Before plugging them in, check that the number of the plug matches the number of the receptacle as illustrated above.

2-2. UHF TUNER DIAL CALIBRATION

1. Turn UHF tuner shaft fully counterclockwise.
2. Let these dents of UHF dial coincide with each other. (The channel digits indicate 14.)
3. Let the gear of the UHF dial engage with the skip gear, and put them on the UHF tuner shaft.
4. Attach the roller ass'y with UHF dial.



SECTION 3

CIRCUIT ADJUSTMENTS

(1) The following adjustments should be made when a complete realignment is required or a new picture tube is installed.
(2) These adjustment should be performed with the rated power supply voltage unless otherwise noted.

Controls and switches should be set as follows:
PICTURE control . . . fully clockwise (maximum)
BRIGHT control . . . fully leftwards (maximum)
AUTO, AFT switches . . .ON (maximum)

Make the following adjustments in the order as follows given:

1. Beam Landing
2. Convergence
3. White Balance

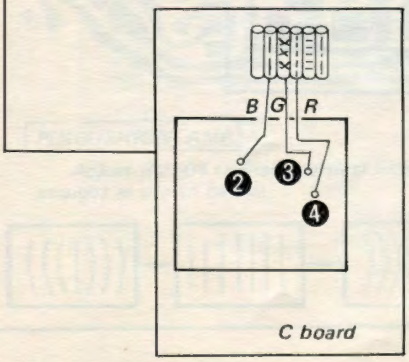
Note: Test Equipment Required.
1. Color-bar/Pattern Generator
2. Degausser

3-1. BEAM LANDING

Preparation:

- Feed in the white pattern.
- Before starting, degauss the entire screen.

1. Loosen deflection yoke screw.
2. Set purity control as shown in Fig. 3-1.
3. Slide deflection yoke as far forward as it will go.
4. Position neck ass'y as shown in Fig. 3-2.
5. Disconnect leads ❷ and ❸ on the C board.
6. Adjust purity control to center vertical red band as shown in Fig. 3-3.
7. Slide deflection yoke back for a uniform red screen.
8. Check green and blue rasters for uniformity by performing the same way as steps 5, 6 and 7.
   To get a uniform green screen,
   connect lead ❸ and disconnect leads ❷ and ❹ on the C board.
   To get a uniform blue screen,
   connect lead ❷ and disconnect leads ❸ and ❹ on the C board.
   After these checks, connect the leads ❷, ❸ and ❹.
9. Tighten the deflection yoke screw.
10. Check if mislanding appears at corners a–d as shown in Fig. 3-4. If mislanding is observed, correct it as shown in Fig. 3-4.
11. Confirm that beam landing is correct when the receiver is faced in all direction.



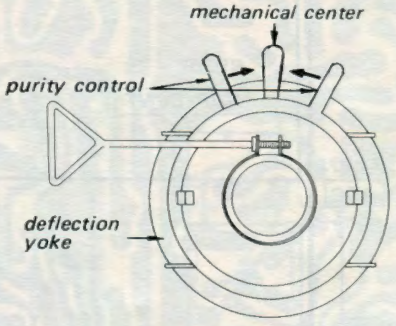


Fig. 3-1.

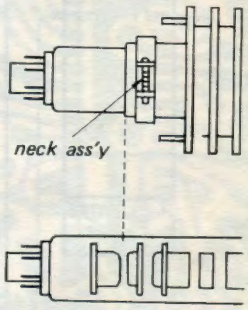


Fig. 3-2.

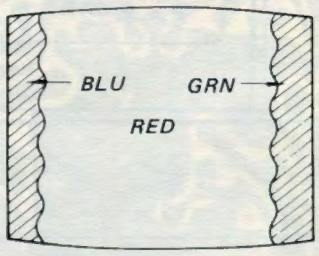


Fig. 3-3.

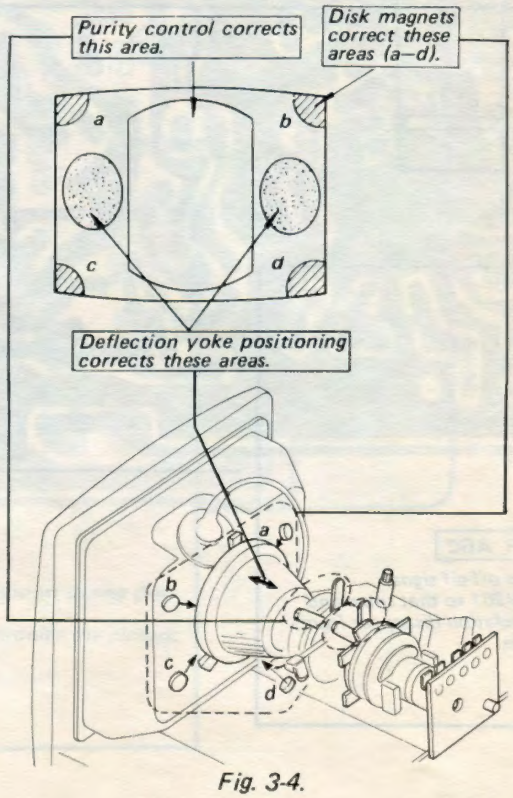


Fig. 3-4.

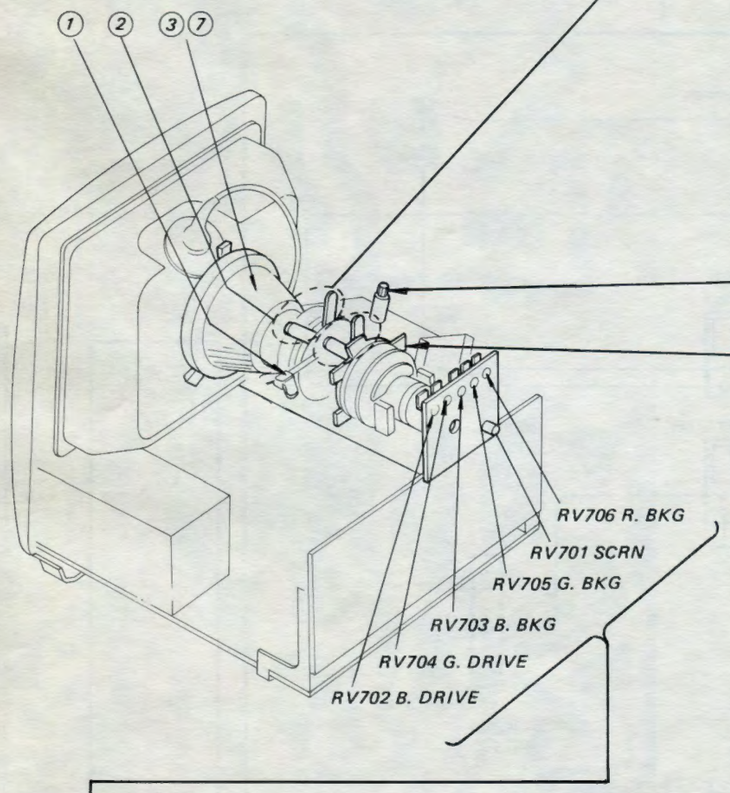
KV-9300

3-2. CONVERGENCE

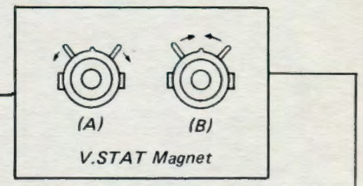
Preparation:

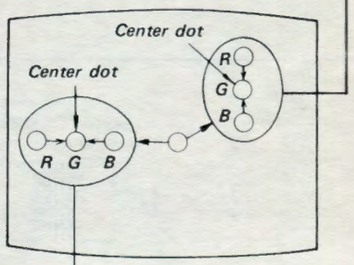
- Before starting, perform FOCUS, H.SIZE, V.SIZE and V.LIN adjustments.
- Set BRIGHT control to fully rightwards.
- Feed in the dot pattern.

Note: *Circled numbers indicate steps of Beam Landing.*



(1) Horizontal and Vertical Static Convergence





If blue dot does not coincide with red and green dots,

Move BMC magnet (a) to correct insufficient H.static convergence.

Rotate BMC magnet (b) to correct insufficient V.static convergence.

In either case, repeat Beam Landing Adjustment.

3-3. WHITE BALANCE

Feed in the cross-hatch pattern.

1. Turn PICTURE control fully counterclockwise, and set BRIGHT control to fully rightwards.
2. Turn RV702 (B.DRIVE) and RV704 (G.DRIVE) fully clockwise.
3. Set RV703 (B.BKG), RV706 (R.BKG), and RV705 (G.BKG) to mechanical center.
4. Turn RV701 (SCRN) slowly to obtain a faintly visible cross-hatch. Note the color that first becomes visible by turning RV701. Do not turn a BKG control for this color.
5. Adjust the other two BKG controls for best white balance (neutral gray) of the faint cross-hatch.
6. Turn PICTURE control fully clockwise, and set BRIGHT control to fully leftwards. Observe the screen and adjust the DRIVE controls for best white balance.
7. Repeat Steps 1 through 6 several times.

(2) Dynamic Convergence Adjustment

Preparation:

- Before starting, perform Horizontal and Vertical Static Convergence Adjustment.

1. Loosen deflection yoke screw.
2. Remove deflection yoke spacers.
3. Move the deflection yoke for best convergence as shown in Fig. 3-5.
4. Tighten the deflection yoke screw.
5. Install the deflection yoke spacers.

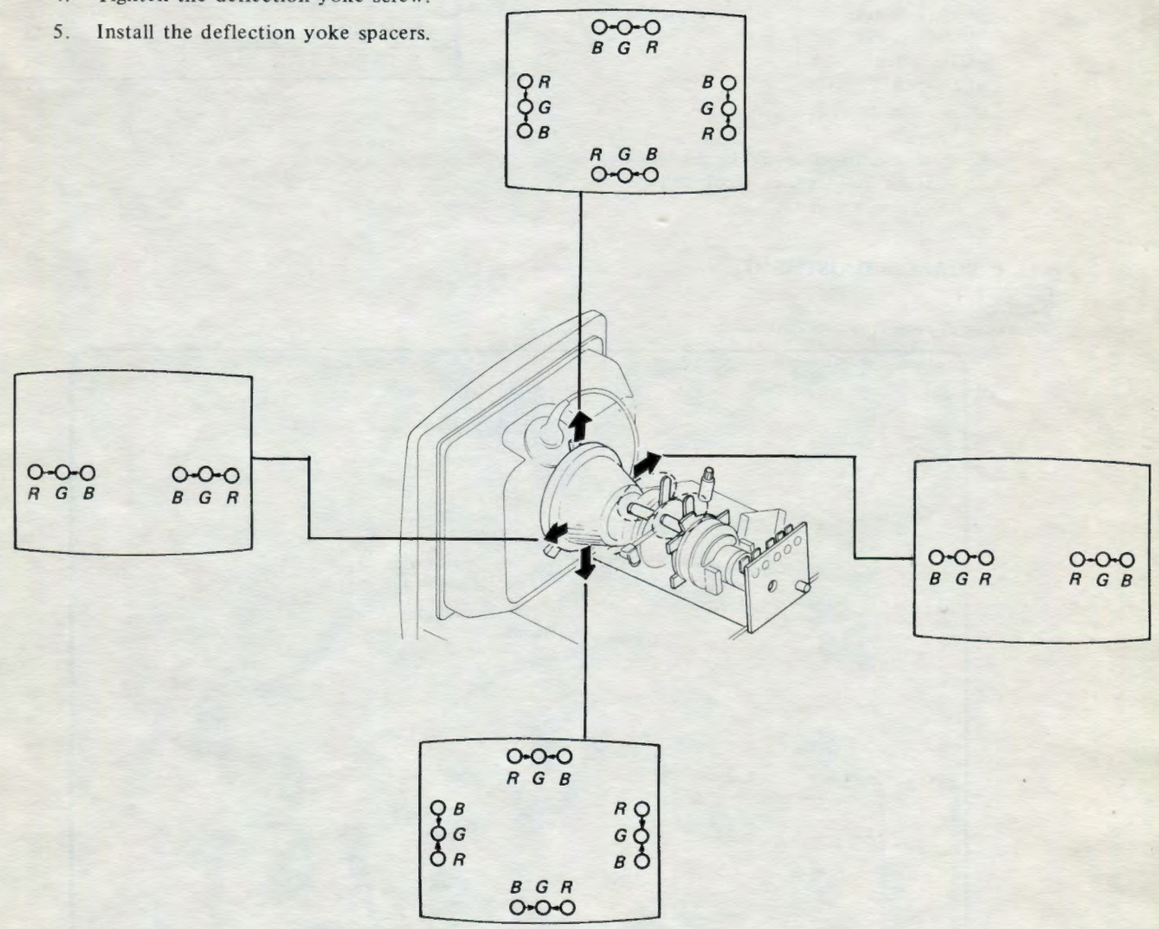


Fig. 3-5.

Note: (1) TEST EQUIPMENT REQUIRED

1. Oscilloscope
2. Voltmeter (VOM)
3. Color-bar/pattern generator
4. Variable auto-transformer.

(2) INPUT SIGNAL

When making these adjustments, feed in a cross-hatch, color-bar or an off-air signal.

(3) CONTROL AND SWITCH SETTINGS

Controls and switches should be set as follows when making checks and adjustments unless otherwise noted.

PICTURE control
HUE control
BRIGHT control
COLOR control
AUTO switch . . . ON
AFT switch . . . . ON
} Set for best picture

(4) These adjustment should be performed with the rated power supply voltage unless otherwise noted.

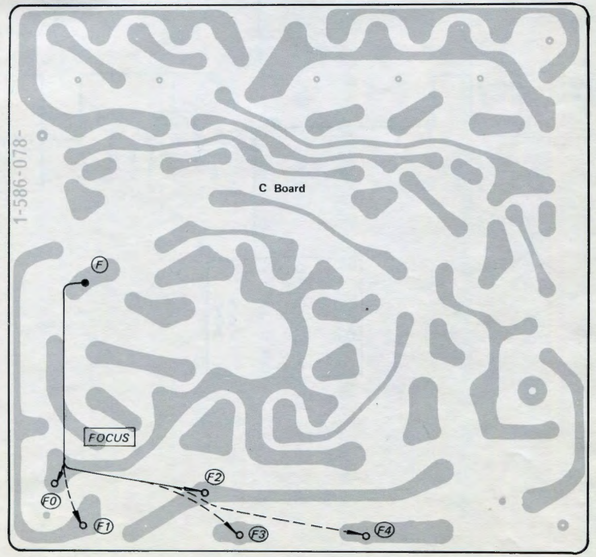
(5) CIRCUIT ADJUSTMENTS

Adjustment	Circuit Board	Page
FOCUS	C	10
B+ (115 V)	A	11
AFT		
VHF TUNER AGC		
ACC		12
HUE CENT		
BAT		
4.5 MHz TRAP		
H OSC CONTROL	D	13
PINCUSHION AMP		
H FREQ		

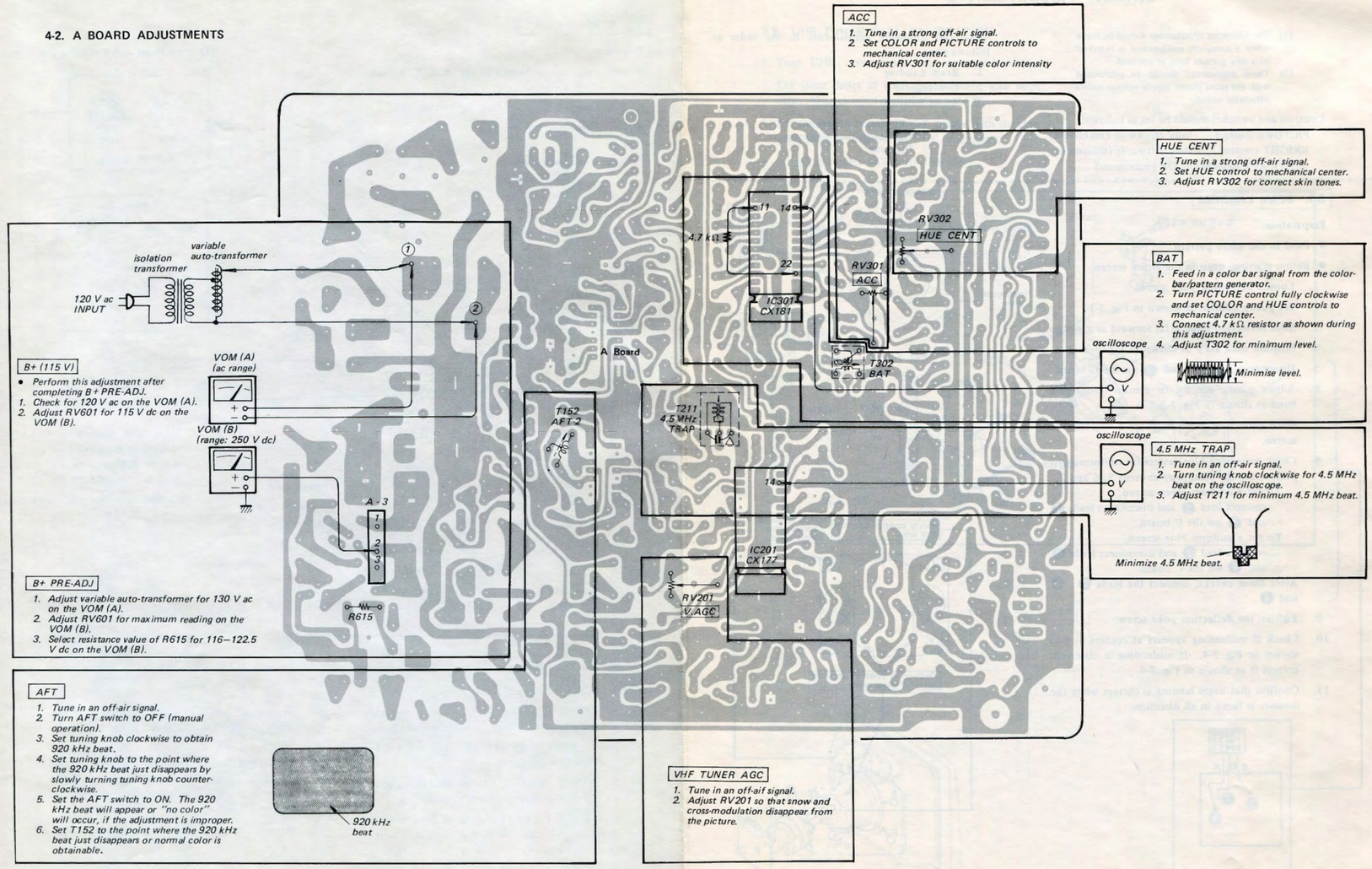
4-1. C BOARD ADJUSTMENT

FOCUS

Select one of connections for best focus.



4-2. A BOARD ADJUSTMENTS



B+ (115 V)

- *Perform this adjustment after completing B+ PRE-ADJ.*

1. *Check for 120 V ac on the VOM (A).*
2. *Adjust RV601 for 115 V dc on the VOM (B).*

B+ PRE-ADJ

1. *Adjust variable auto-transformer for 130 V ac on the VOM (A).*
2. *Adjust RV601 for maximum reading on the VOM (B).*
3. *Select resistance value of R615 for 116–122.5 V dc on the VOM (B).*

AFT

1. *Tune in an off-air signal.*
2. *Turn AFT switch to OFF (manual operation).*
3. *Set tuning knob clockwise to obtain 920 kHz beat.*
4. *Set tuning knob to the point where the 920 kHz beat just disappears by slowly turning tuning knob counter-clockwise.*
5. *Set the AFT switch to ON. The 920 kHz beat will appear or "no color" will occur, if the adjustment is improper.*
6. *Set T152 to the point where the 920 kHz beat just disappears or normal color is obtainable.*

ACC

1. *Tune in a strong off-air signal.*
2. *Set COLOR and PICTURE controls to mechanical center.*
3. *Adjust RV301 for suitable color intensity*

HUE CENT

1. *Tune in a strong off-air signal.*
2. *Set HUE control to mechanical center.*
3. *Adjust RV302 for correct skin tones.*

BAT

1. *Feed in a color bar signal from the color-bar/pattern generator.*
2. *Turn PICTURE control fully clockwise and set COLOR and HUE controls to mechanical center.*
3. *Connect 4.7 kΩ resistor as shown during this adjustment.*
4. *Adjust T302 for minimum level.*

4.5 MHz TRAP

1. *Tune in an off-air signal.*
2. *Turn tuning knob clockwise for 4.5 MHz beat on the oscilloscope.*
3. *Adjust T211 for minimum 4.5 MHz beat.*

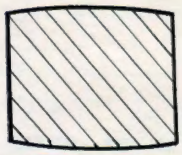
VHF TUNER AGC

1. *Tune in an off-aif signal.*
2. *Adjust RV201 so that snow and cross-modulation disappear from the picture.*

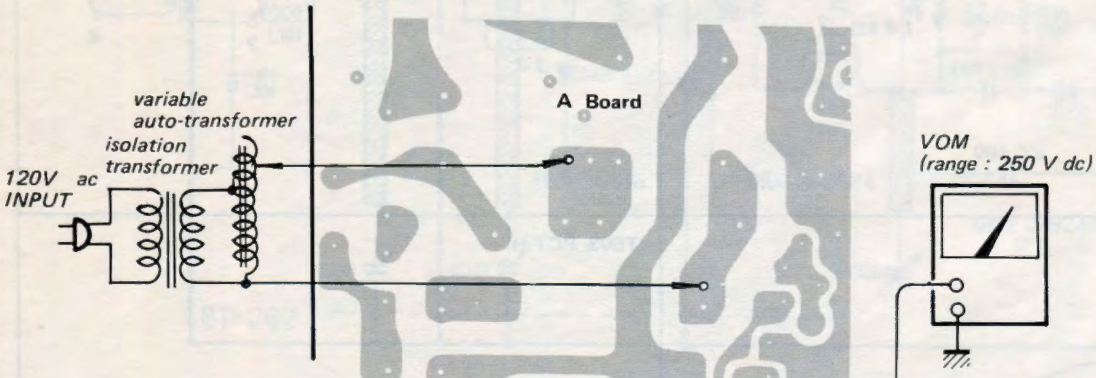
4-3. D BOARD ADJUSTMENTS

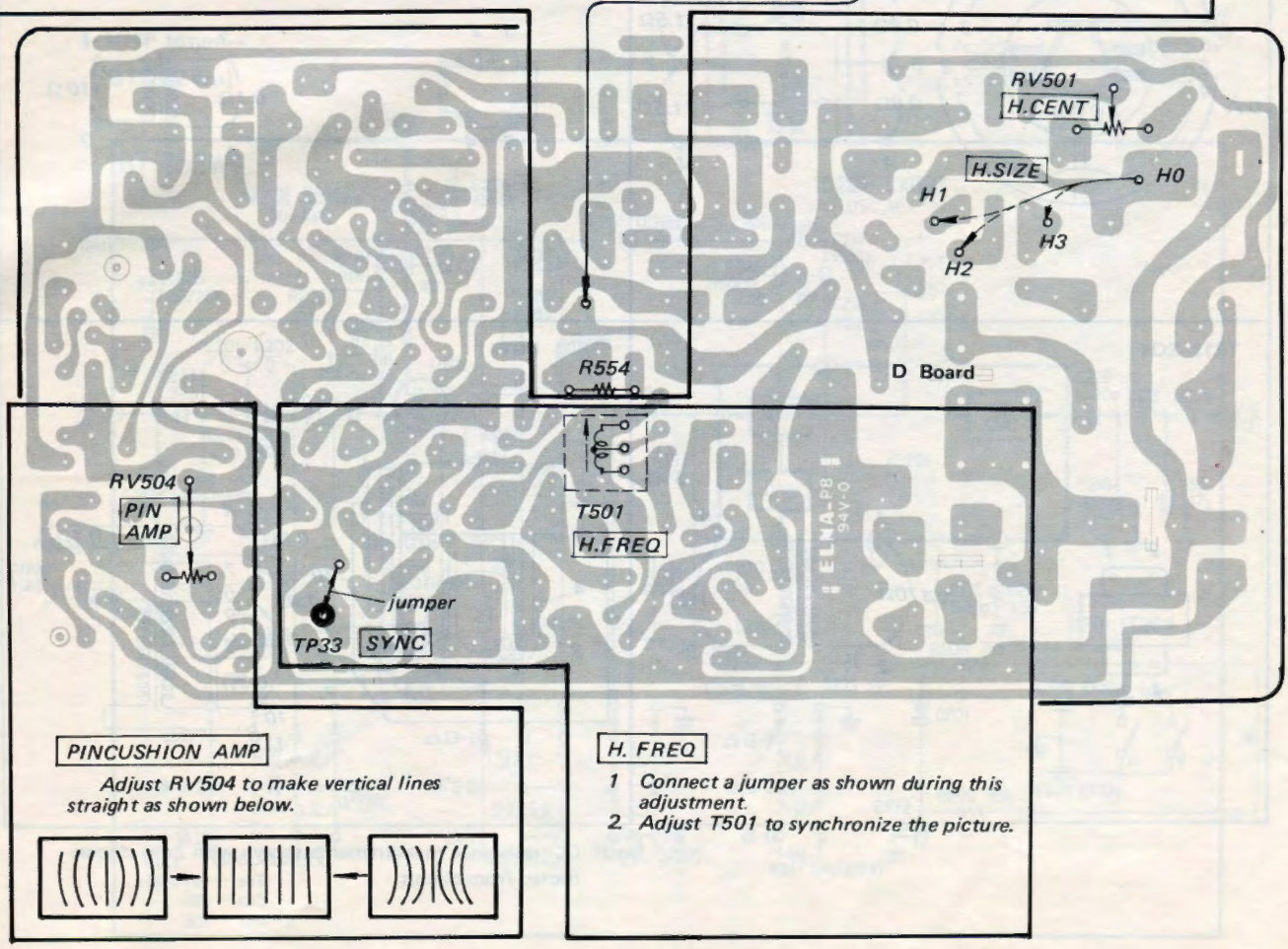
H. OSC CONTROL

1. Connect variable auto-transformer as shown.
2. Tune in an off-air signal.
3. Unsolder the diode D602 on the A board.
4. Adjust variable auto-transformer for 130.5–135.5 V dc on the VOM.
5. Select resistance value of R554 so that raster disappears or raster does not synchronize as shown.



6. Check to see that raster appears at 130.5 V dc VOM reading.
7. Solder the diode D602.





PINCUSHION AMP

Adjust RV504 to make vertical lines straight as shown below.

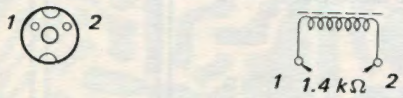
H. FREQ

1. Connect a jumper as shown during this adjustment.
2. Adjust T501 to synchronize the picture.

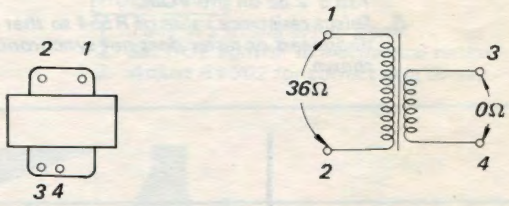
SECTION 5
DIAGRAMS

5-1. DC RESISTANCE AND WINDING DIAGRAMS OF COILS AND TRANSFORMERS

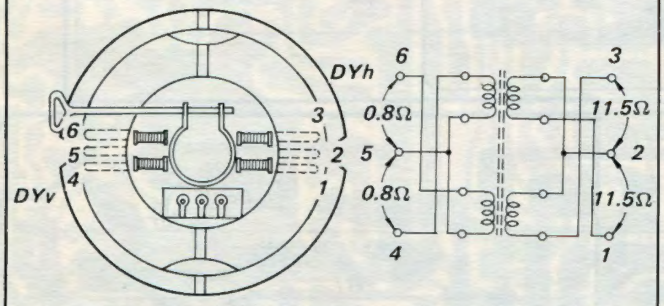
L503 HCC



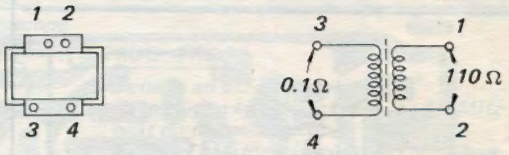
T502 HDT



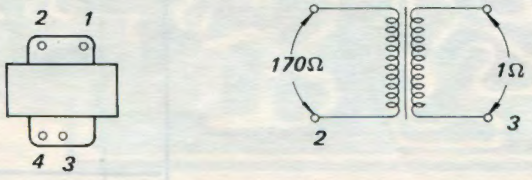
L903 DY



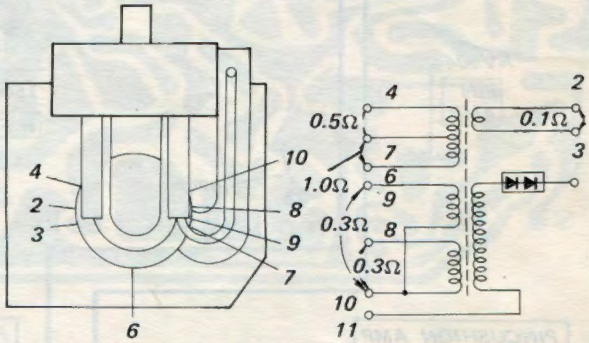
T503 PCT-H



T213 SOT



T801 FBT

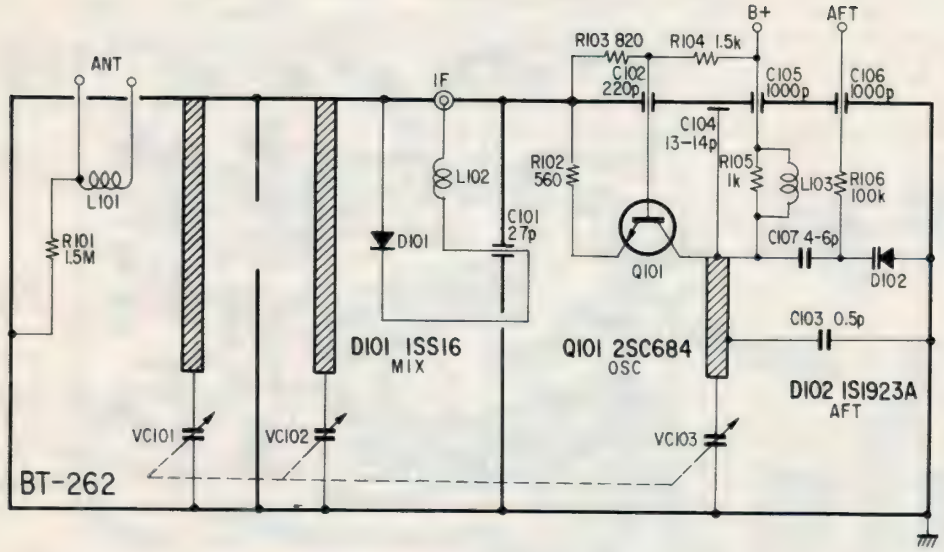


Note: DC resistance measurements shown with coils disconnected from circuit.

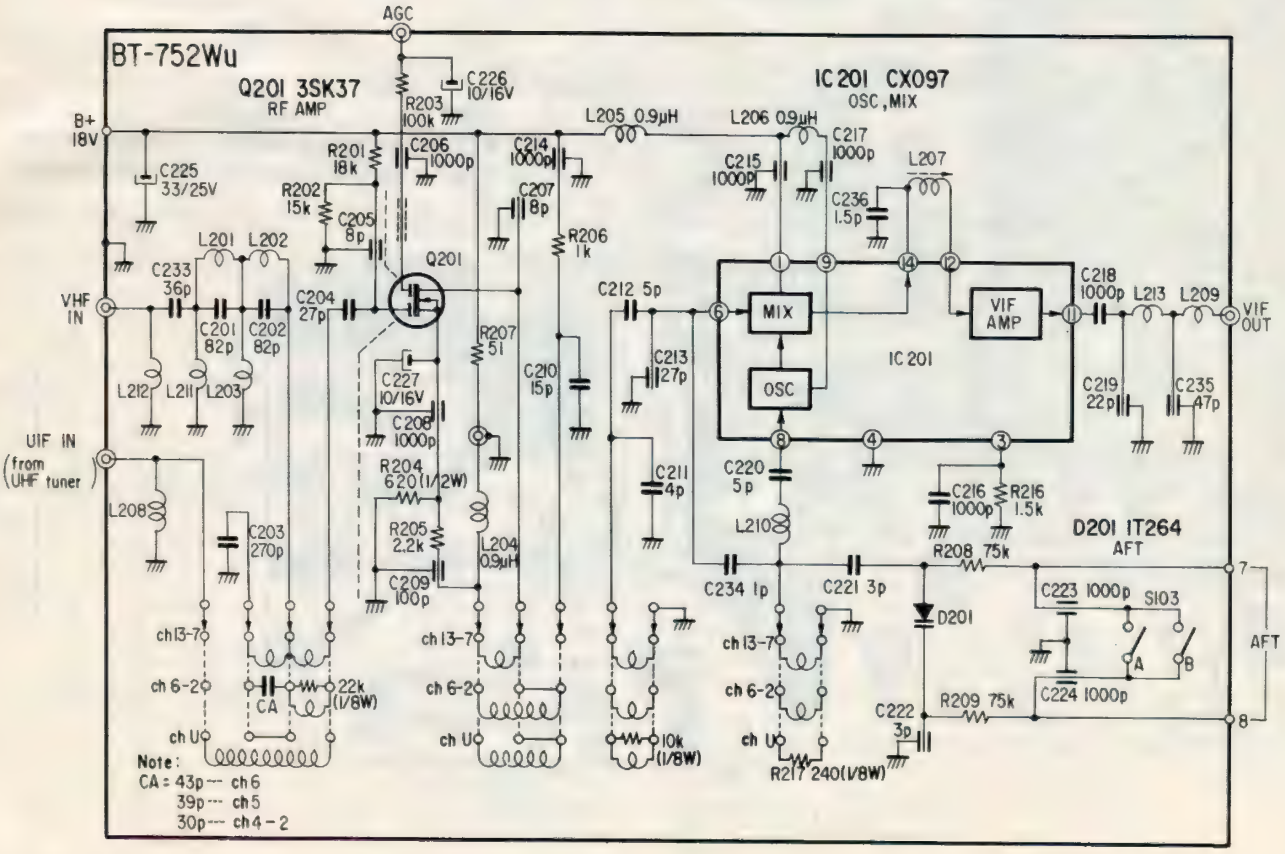
Note: 1. Tuner reference numbers are not included in the Electrical Parts List (Page 27 ~ 32).

5-2. UHF AND VHF TUNER SCHEMATIC DIAGRAMS

– UHF tuner –
(BT-262)



– VHF tuner –
(BT-752Wu)

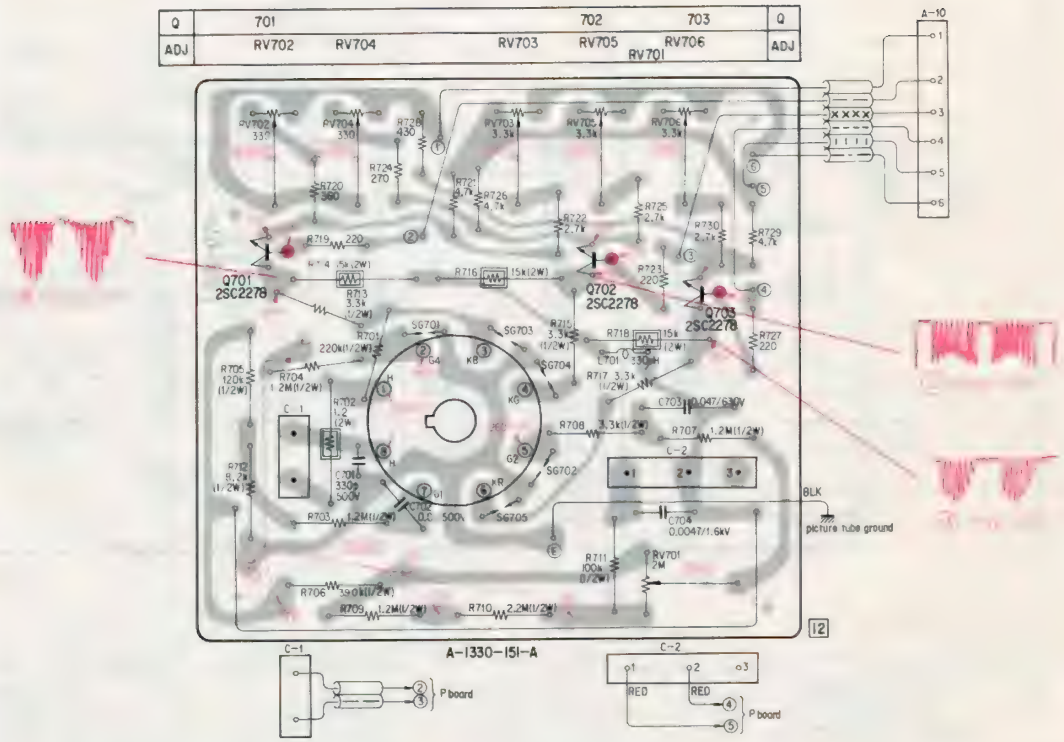


C [R. G. B OUT]

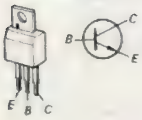
P [FBT]

5-3. MOUNTING DIAGRAMS

– Conductor Side –



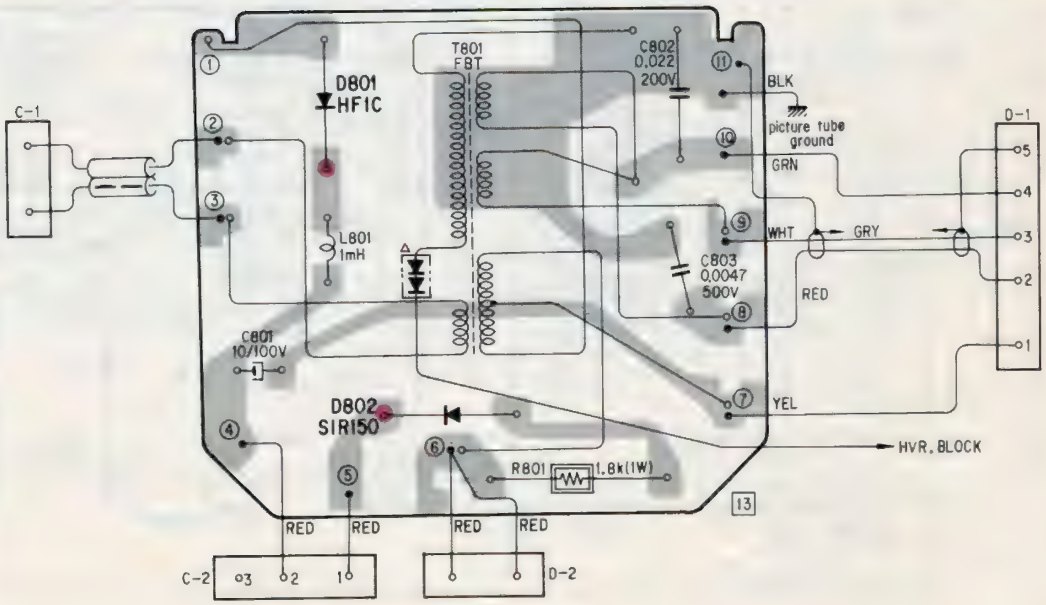
2SC2278



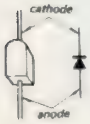
Note:

- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.

– P Board –



HF1C



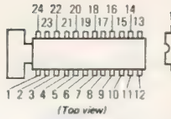
SIR150

– A Board –

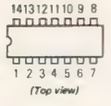
REG, VIF, SIF
AFT, CHROMA
Y, AMP

CX095A

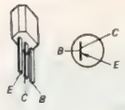
CX177
CX181



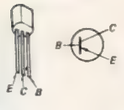
M5135P



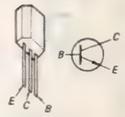
2SA677



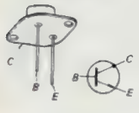
2SA773
2SA840



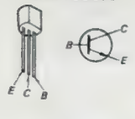
2SC633A



2SC867



2SC1475
2SC1670
2SC1890A



1S1555

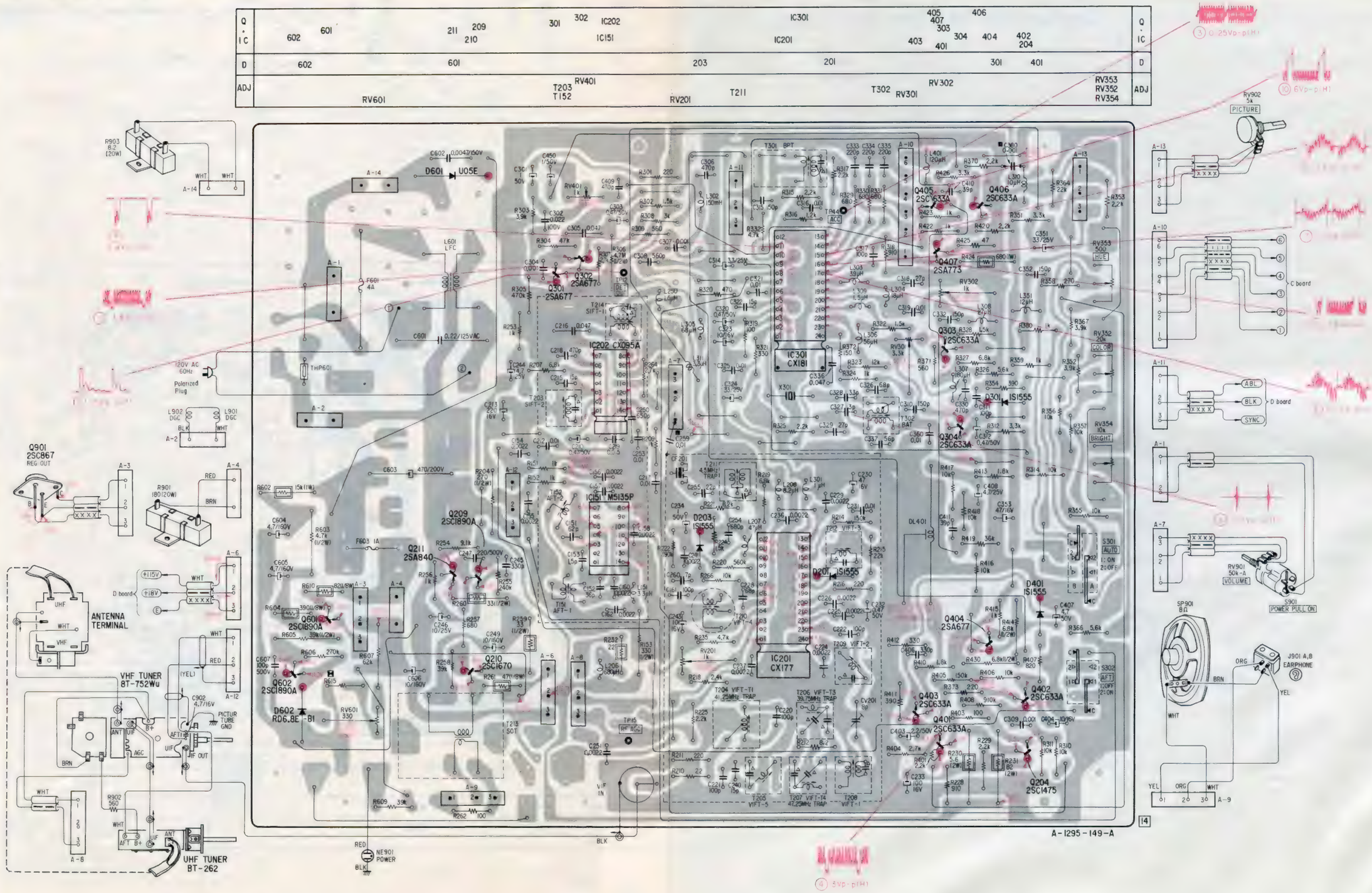
RD6.8E-B1

U05E

Note:

- ● ○— : parts extracted from the component side.
- ● ●— : parts extracted from the conductor side.

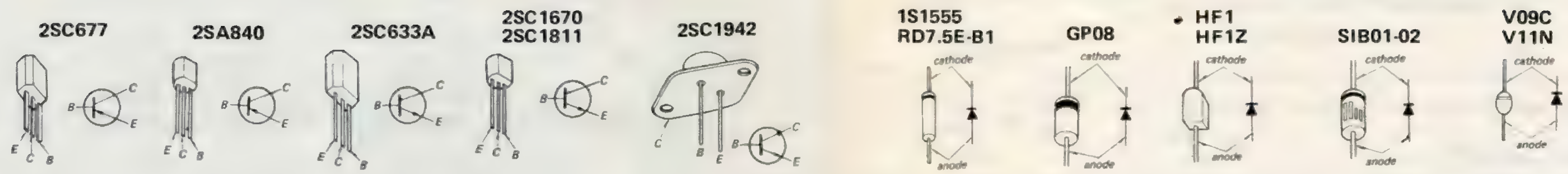
Q·IC	602	601	211 209 210	301 302 IC202 IC151	IC301 IC201	405 407 303 304 403 401	406 404 402 204	Q·IC
D	602	601		203	201		301 401	D
ADJ	RV601	T203 T152 RV401	RV201	T211	T302 RV301	RV302	RV353 RV352 RV354	ADJ



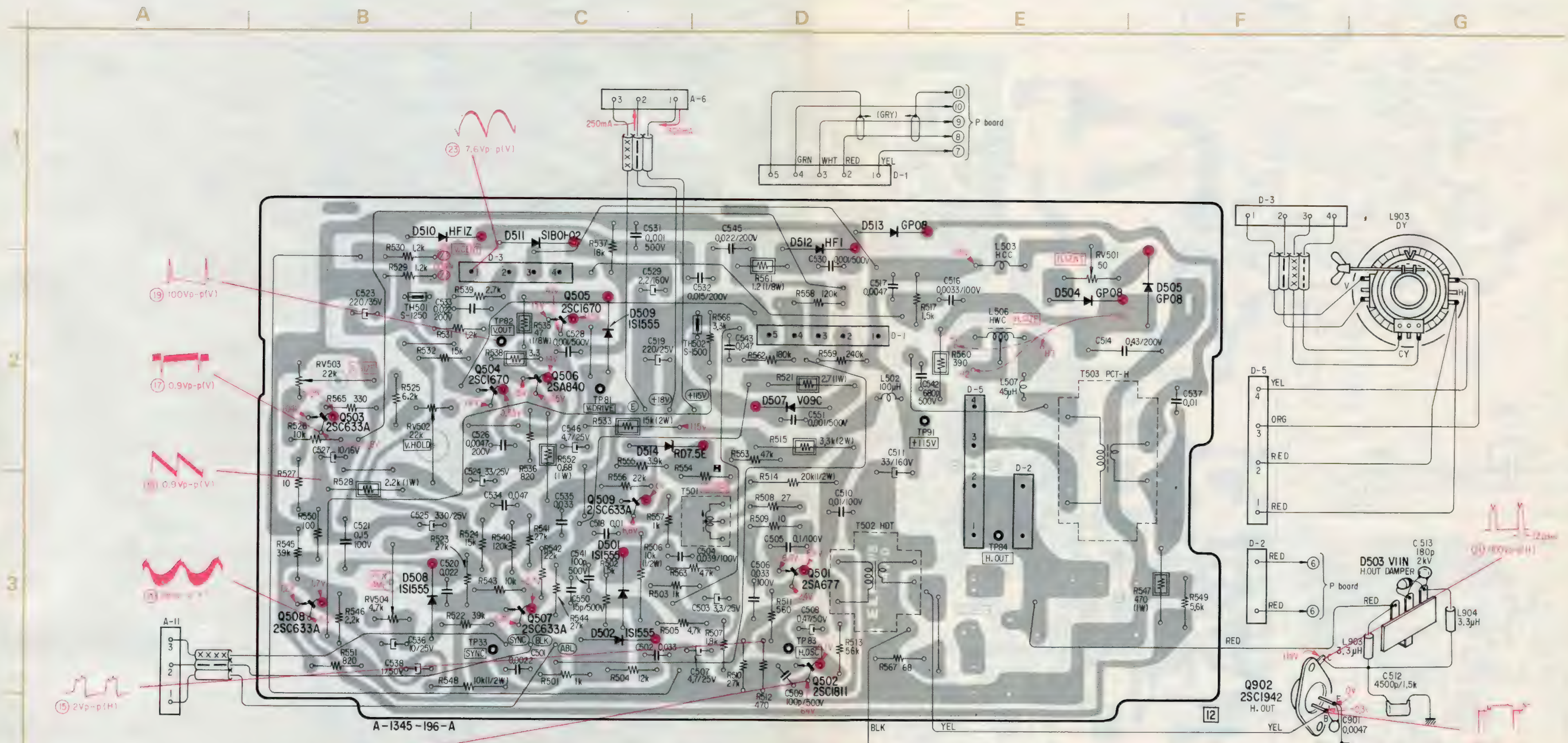
H OSC/DRIVE/OUT
V OSC/DRIVE/OUT
H CENT, PIN, BLK

D D

– D Board –



Note:
- ● ○— : parts extracted from the component side.
- ● ●— : parts extracted from the conductor side.



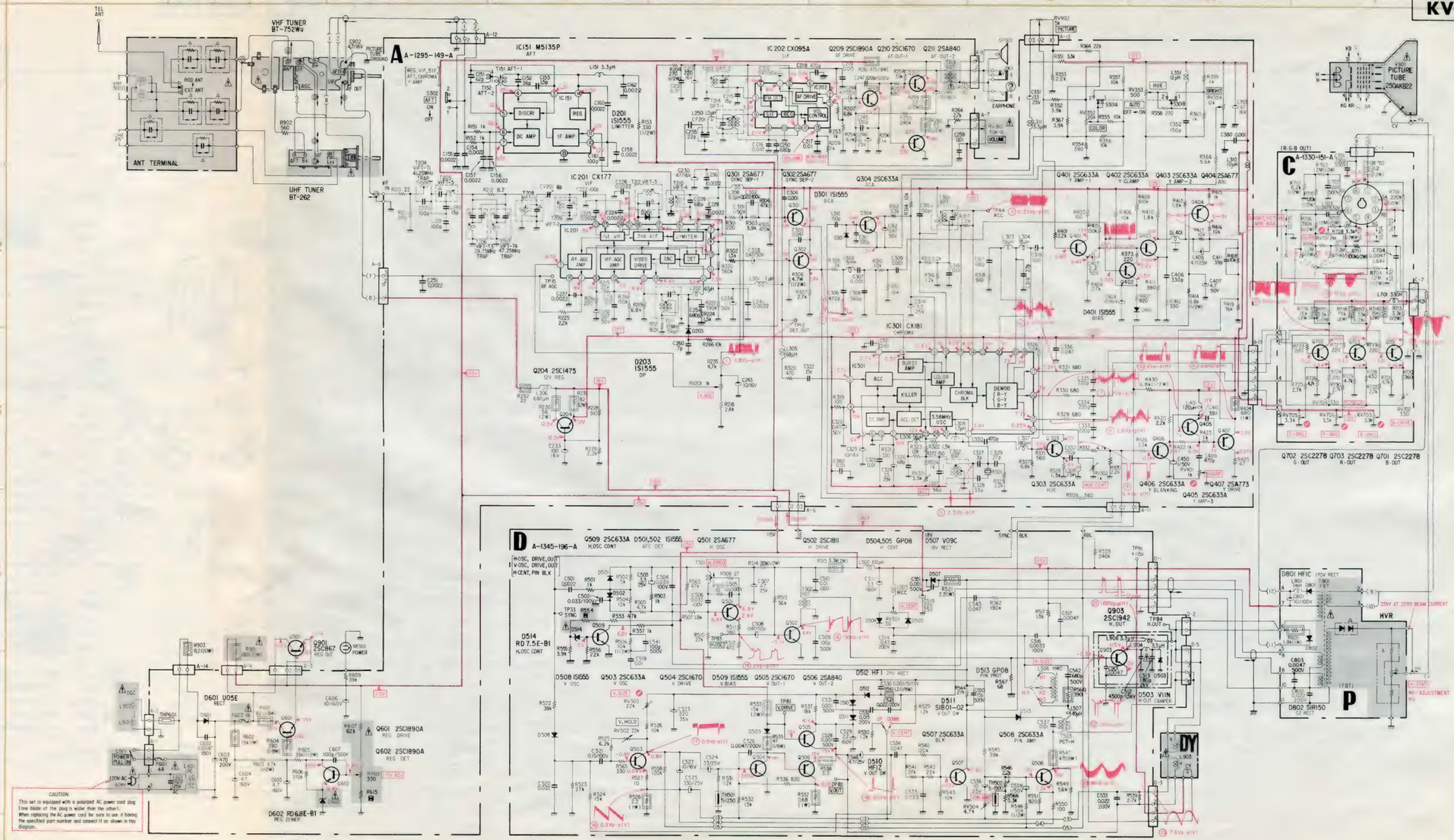
	B	C	D	E	F	G
Q	503 508	504 506 507 505 509	501 502		902	
D	510 508	511 509,501 502 514	507 512 513	503 504	505	503
ADJ	RV503 RV504		T501	RV501		

5-4. SCHEMATIC DIAGRAM

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

Note:

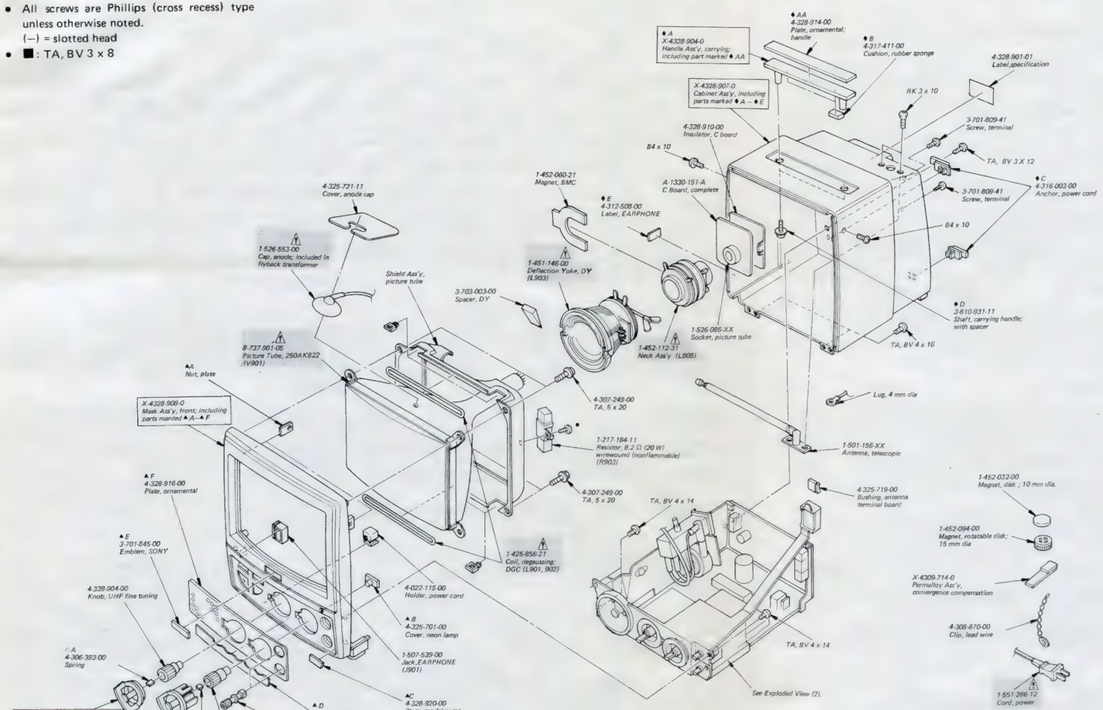
- All capacitors are in μF unless otherwise noted. p: μμF 50 WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ = 1000 Ω; MΩ = 1000 kΩ
- : nonflammable resistor.
- △ : internal component.
- : panel designation.
- : factory-selected value.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- S901 is ganged to RV901.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 20,000-ohm-per-volt VOM.
- Readings are taken with a color-bar signal input.
- Voltage variations may be noted due to normal production tolerances.
- : adjustable without removing cabinet.
- : adjustment for repair.



(1)

Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- ■ : TA, BV 3 x 8

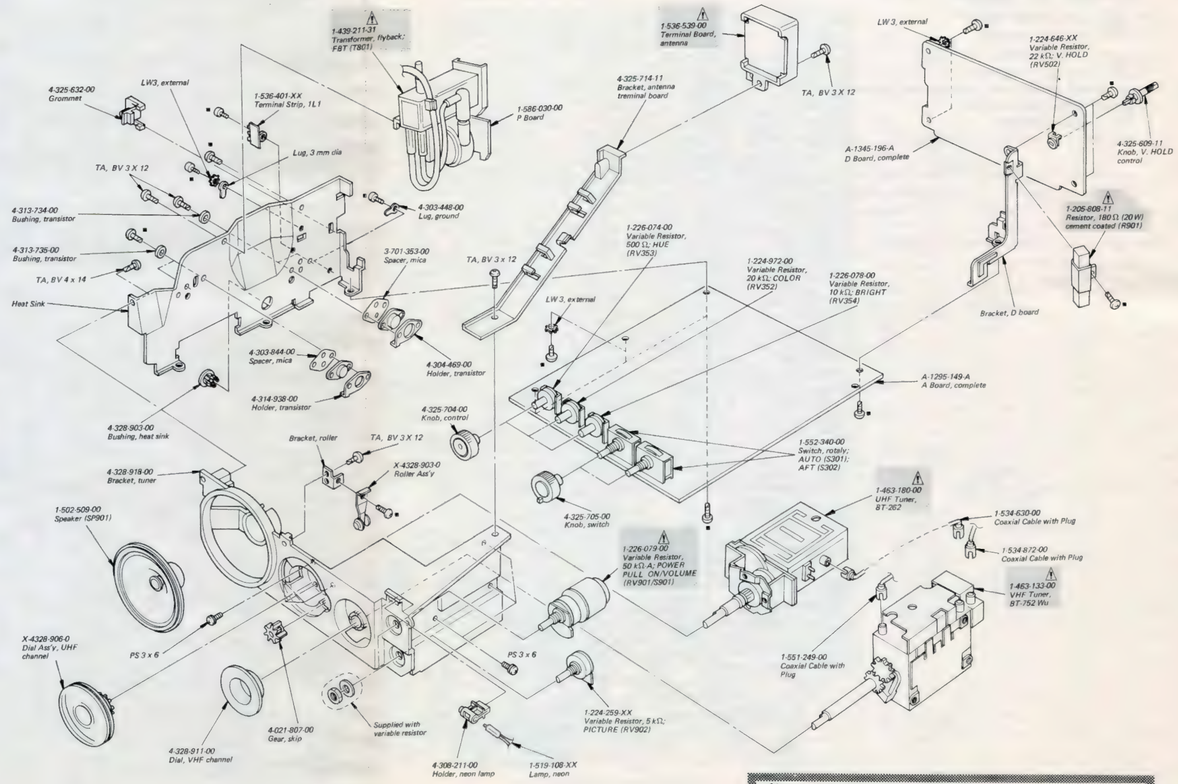


Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

(2)

Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- ■ : TA, BV 3 x 8



Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

SECTION 7
ELECTRICAL PARTS LIST

Ref. No.	*Part No.*	*Description*
		TUNERS AND CIRCUIT BOARDS
⚠	1-463-133-00	VHF Tuner, BT-752Wu
⚠	1-463-180-00	UHF Tuner, BT-262
	1-586-030-00	P Board
	A-1295-149-A	A Board, complete
	A-1330-151-A	C Board, complete
	A-1345-196-A	D Board, complete
		SEMICONDUCTORS
		Transistors
Q204		2SC1475
Q209		2SC1890A
Q210		2SC1670
Q211		2SA840
Q301, 302		2SA677
Q303, 304 Q401–403		2SC633A
Q404		2SA677
Q405, 406		2SC633A
Q407		2SA773
Q501		2SA677
Q502		2SC1811
Q503		2SC633A
Q504, 505		2SC1670
Q506		2SA840
Q507–509		2SC633A
Q601, 602		2SC1890A
Q701–703		2SC1127
Q901		2SC867
Q902		2SC1942
		ICs
IC151		M5135P
IC201		CX177
IC202		CX095A
IC301		CX181
		Diodes
D201, 203 D301, 401 D501, 502		1S1555
D503		V11N
D504, 505		GP08
D507		V09C
D508, 509		1S1555
D510		HF1Z
D511		SIB01-02
D512		HF1
D513		GP08
D514	⚠	RD7.5E-B1
D601		U05E
D602	⚠	RD6.8E-B1
D801		HF1C (included in flyback transformer)
D802		SIR150 (included in flyback transformer)
		Miscellaneous
TH501	1-800-198-XX	Thermistor, S-1250
TH502	1-800-069-XX	Thermistor, S-1500
THP601	1-800-065-XX	Thermistor (positive)
		COILS

All coils are microinductors unless otherwise noted.

L151	1-407-184-XX	3.3μH
L206	1-407-715-00	680μH
L207	1-407-165-XX	47μH
L208	1-407-189-XX	8.2μH
L250	1-407-180-XX	1.5μH
L301	1-407-178-XX	1μH
L302	1-407-877-00	15mH
L303	1-407-164-XX	39μH
L304	1-407-696-00	18μH
L305	1-407-167-XX	68μH

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description
L306	1-407-747-00	56μH
L307	1-407-172-XX	180μH
L308	1-407-162-XX	27μH
L309	1-407-180-XX	1.5μH
L351	1-407-158-XX	12μH
L401	1-407-170-XX	120μH
L502	1-407-169-XX	100μH
L503	1-459-194-00	Horizontal Centering Choke, HCC
L506	1-459-199-00	Horizontal Width, HWC
L507	1-459-155-00	45μH
L509	1-407-365-00	0.74μH, spook choke
L601	⚠ 1-441-855-00	Line Filter, LFC
L701	1-407-175-XX	330μH
L801	1-407-195-XX	1mH (included in flyback transformer)
L901, 902	⚠ 1-425-856-21	Degaussing, DGC
L903	⚠ 1-451-146-00	Deflection Yoke, DY
L905	⚠ 1-452-112-31	Neck Ass'y
DL401	1-415-132-00	Delay Line

TRANSFORMERS AND FILTER

CF201	1-527-260-00	Ceramic Filter
T151	1-403-904-00	AFT-1
T152	1-403-905-00	AFT-2
T203	1-403-871-00	SIFT-2
T204	1-409-213-00	VIFT-T1, 41.25 MHz trap
T205	1-409-256-00	VIFT-5
T206	1-409-319-00	VIFT-T3, 39.75MHz trap
T207	1-409-318-00	VIFT-T4, 47.25MHz trap
T208	1-403-925-00	VIFT-1
T209	1-403-925-00	VIFT-2
T210	1-403-731-00	VIFT-4
T211	1-409-146-00	4.5MHz Trap
T212	1-403-550-00	VIFT-3
T213	⚠ 1-427-438-00	Sound Output, SOT
T214	1-403-360-00	SIFT-1
T301	1-425-786-00	Bandpass, BPT
T302	1-425-785-00	Burst Amprifier, BAT
T501	1-405-760-00	Horizontal Blocking, HBT
T502	1-437-071-00	Horizontal Drive, HDT
T503	1-421-263-00	Horizontal Pincushion Correction, PCT-H
T801	⚠ 1-439-211-31	Flyback, FBT
	including	
D801	⚠	Diode, HF1C
D802	⚠	Diode, SIR150
L801	⚠ 1-407-195-XX	Coil, 1 mH
C801	⚠ 1-121-126-11	Capacitor, 10 μF 100 V elect
C802	⚠ 1-108-696-61	Capacitor, 0.022 μF 200 V mylar
C803	⚠ 1-102-085-11	Capacitor, 0.0047 μF 500 V ceramic
R801	⚠ 1-213-146-11	Resistor, 1.8 kΩ 1 W metal oxide (nonflammable)
	⚠ 1-526-553-00	Cap, anode

CAPACITORS

All capacitors are in μF and ceramic unless otherwise noted.
50 WV or less are not indicated except for electrolytics.
p : μμF, elect = electrolytic

C151	1-102-493-11	62 p		
C152	1-102-519-11	36 p		
C153	1-102-576-11	1.5 p		
C154–158, C160	1-102-121-11	0.0022		
C161	1-102-973-11	100 p		
C162	1-102-121-11	0.0022		
C210	1-121-951-11	0.47	50 V	elect
C212	1-101-118-11	0.01		
C213	1-123-068-11	220	16 V	elect
C215	1-102-668-11	15 p		
C216	1-101-006-11	0.047		
C217	1-101-004-11	0.01		
C218	1-102-114-11	470 p		
C219	1-161-015-11	0.015		(semiconductor)
C220	1-102-529-11	100 p		
C221, 222	1-102-973-11	100 p		
C224–226	1-102-121-11	0.0022		
C228	1-102-525-11	68 p		
C229	1-102-121-11	0.0022		
C230	1-121-409-11	47	16 V	elect
C231	1-161-013-11	0.01		(semiconductor)
C232	1-121-726-11	0.47	50 V	elect
C233	1-121-415-11	100	16 V	elect
C234	1-121-391-11	1	50 V	elect
C236, 237	1-102-121-11	0.0022		

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description		
C240	1-102-951-11	15 p		
C241	1-102-121-11	0.0022		
C243	1-121-651-11	10	16 V	elect
C244	1-121-395-11	4.7	25 V	elect
C245	1-102-820-11	330 p		
C246	1-121-398-11	10	25 V	elect
C247	1-102-244-11	220 p	500 V	
C249	1-123-178-11	10	160 V	elect
C250	1-102-116-11	680 p		
C251	1-102-121-11	0.0022		
C254	1-101-439-11	680 p		
C255	1-102-959-11	22 p		
C259	1-101-118-11	0.01		
C260	1-102-944-11	7 p		
C301	1-121-391-11	1	50 V	elect
C302	1-108-381-12	0.022	100 V	mylar
C303	1-121-726-11	0.47	50 V	elect
C304	1-102-074-11	0.001		
C305	1-101-006-11	0.047		
C306	1-102-824-11	470 p		
C307	1-102-074-11	0.001		
C308	1-102-115-11	560 p		
C309	1-102-074-11	0.001		
C310	1-101-361-11	150 p		
C311	1-102-973-11	100 p		
C312	1-121-726 11	0.47	50 V	elect
C314	1-121-392-11	3.3	25 V	elect
C315	1-102-888-11	150 p		
C316	1-101-004-11	0.01		
C317	1-102-973-11	100 p		
C318	1-102-961-11	27 p		
C319	1-101-004-11	0.01		
C320	1-121-726-11	0.47	50 V	elect
C321	1-101-004-11	0.01		
C322	1-102 951-11	15 p		
C323	1-121-651-11	10	16 V	elect
C324	1-121-404-11	33	25 V	elect
C325	1-101-004-11	0.01		
C326	1-101-888-11	68 p		

Ref. No	Part No.	Description		
C327	1-102-936-11	3 p		
C328	1-102-877-11	33 p		
C329	1-102-516-11	27 p		
C330	1-102-824-11	470 p		
C332	1-101-361-11	150 p		
C333–335	1-102-978-11	220 p		
C336	1-101-006-11	0.047		
C337	1-102-758-11	56 p		
C351	1-121-404-11	33	25 V	elect
C352	1-101-361-11	150 p		
C353	1-121-409-11	47	16 V	elect
C360	1-101-004-11	0.01		
C403	1-121-450-11	2.2	50 V	elect
C404	1-121-651-11	10	16 V	elect
C406	1-102-112-11	330 p		
C407	1-121-396-11	4.7	50 V	elect
C408	1-121-395-11	4.7	25 V	elect
C409	1-102-824-11	470 p		
C410, 411	1-102-965-11	39 p		
C450	1-121-391-11	1	50 V	elect
C501	1-161-005-11	0.0022		(semiconductor)
C502	1-108-383-12	0.033	100 V	mylar
C503	1-121-392-11	3.3	25 V	elect
C504	1-108-384-12	0.039	100 V	mylar
C505	1-108-389-12	0.1	100 V	mylar
C506	1-130-117-11	0.033	100 V	polyethylene
C507	1-121-395-11	4.7	25 V	elect
C508	1-121-726-11	0.47	50 V	elect
C509	1-101-810-11	100 p	500 V	
C510	1-108-377-12	0.01	100 V	mylar
C511	1-123-024-11	33	160 V	elect
C512	⚠1-130-121-11	4500 p	1.5 kV	polyethylene
C513	⚠1-102-154-12	180 p	2 kV	
C514	1-130-069-11	0.43	200 V	polyethylene
C516	1-108-371-12	0.0033	100 V	mylar
C517	1-161-009-11	0.0047		(semiconductor)
C518	1-161-013-11	0.01		(semiconductor)
C519	1-121-936-11	220	25 V	elect

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description		
C520	1-161-017-11	0.022		(semiconductor)
C521	1-108-391-12	0.15	100 V	mylar
C523	1-121-937-11	220	35 V	elect
C524	1-121-404 11	33	25 V	elect
C525	1-121-989-11	330	25 V	elect
C526	1-108-417-12	0.0047	200 V	mylar
C527	1-131-158-11	10	16 V	tantalum
C528	1-102-038-11	0.001	500 V	
C529	1-123-267-11	2.2	160 V	elect
C530, 531	1-102-038-11	0.001	500 V	
C532	1-108-423-12	0.015	200 V	mylar
C533	1-108-425-12	0.022	200 V	mylar
C534	1-161-059-11	0.047		(semiconductor)
C535	1-161-019-11	0.033		(semiconductor)
C536	1-121-398-11	10	25 V	elect
C537	1-161-051-11	0.01		(semiconductor)
C538	1-121-391-11	1	50 V	elect
C541	1-101-810-11	100 p	500 V	
C542	1-102-002-11	680 p	500 V	
C543	1-161-036-11	0.047		(semiconductor)
C545	1-108-425-12	0.022	200 V	mylar
C546	1-121-395-11	4.7	25 V	elect
C550	1-102-316-11	15 p	500 V	
C551	1-102-038-11	0.001	500 V	
C601	⚠1-108-913-21	0.22	125 V ac	mylar
C602	1-102-189-11	0.0047	150 V	
C603	1-125-170-11	470	200 V	elect
C604, 605	1-121-246-11	4.7	160 V	elect
C606	1-123-178-11	10	160 V	elect
C607	1-101-810-11	100 p	500 V	
C701	1-102-030-11	330	500 V	
C702	1-102-050-11	0.01	500 V	
C703	1-129-737-11	0.047	630 V	polyethylene
C704	1-102-223-11	0.0047	1.6 kV	
C801	1-121-126-11	10	100 V	elect
C802	1-108-696-61	0.022	200 V	mylar
C803	1-102-085-11	0.0047	500 V	(included in flyback transformer)

Ref. No.	Part No.	Description		
C901	1-101-003-11	0.0047		
C902	1-121-257-11	4.7	16 V	elect
CV201	1-141-138-XX	8 p	trimmer	

RESISTORS

All resistors are in ohms. Common ¼W carbon resistors are omitted. Refer to the list on page 33 for their part numbers. All variable and adjustable resistors have characteristic curve B, unless otherwise noted. kΩ = 1000Ω, MΩ = 1000 kΩ

R153	1-213-137-11	330	½ W	metal oxide
R204	1-213-136-11	270	½ W	metal oxide
R230	1-206-481-11	56	2 W	metal oxide (nonflammable)
R231	1-206-485-11	82	2 W	metal oxide (nonflammable)
R259, 260	1-211-602-11	33	½ W	carbon (nonflammable)
R261	1-211-933-11	47	⅛ W	carbon (nonflammable)
R306	1-202-727-11	4.7 M	½ W	compoaition
R414	1-202-593-11	6.8 k	½ W	composition
R424	1-213-141-11	680	1 W	metal oxide (nontlammable)
R430	1-202-593-11	6.8 k	½ W	composition
R506	1-213-155-11	10 k	½ W	metal oxide
R514	1-244-904-11	20 k	½ W	carbon
R515	1-206-676-11	3.3 k	2 W	metal oxide (nonflammable)
R521	1-212-365-11	2.7	1 W	metal oxide (nonflammable)
R528	1-212-364-11	2.2	1 W	metal oxide (nonflammable)
R533	1-206-692-11	15 k	2 W	metal oxide (nonflammable)
R535	1-211-933-11	47	⅛ W	carbon (nonflammable)
R538	1-211-687-11	3.3	¼ W	carbon (nonflammable)
R547	1-213-139-11	470	1 W	metal oxide (nonflammable)
R548	1-202-597-11	10 k	½ W	composition

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description		
R552	1-212-358-11	0.68	1 W	metal oxide (nonflammable)
⧓ R554	⚠		¼ W	carbon
R561	1-210-859-11	1.2	⅛ W	carbon (nonflammable)
R602	1-213-157-11	15 k	1 W	metal oxide (nonflammable)
R603	1-213-151 11	4.7	½ W	metal oxide
R604	1-211-441-11	390	⅛ W	carbon (nonflammable)
R605	1-213-162-11	39 k	½ W	metal oxide
R607	⚠ 1-214-175-11	62 k	¼ W	metal oxide
R610	1-211-929-11	82	⅛ W	carbon (nonflammable)
⧓ R615	⚠		¼ W	metal oxide
R701	1-202-629-11	220 k	½ W	composition
R702	1-207-907-11	1.2	2 W	metal oxide (nonflammable)
R703, 704	1-202-647-11	1.2 M	½ W	composition
R705	1-202-623-11	120 k	½ W	composition
R706	1-202-635-11	390 k	½ W	composition
R707	1-202-647-11	1.2 M	½ W	composition
R708	1-202-585-11	3.3 k	½ W	composition
R709	1-202-647-11	1.2 M	½ W	composition
R710	1-202-653-11	2.2 M	½ W	composition
R711	1-202-621-11	100 k	½ W	composition
R712	1-202-595-11	8.2 k	½ W	composition
R713	1-202-585-11	3.3 k	½ W	composition
R714	1-206-692-11	15 k	2 W	metal oxide (nonflammable)
R715	1-202-585-11	3.3 k	½ W	composition
R716	1-206-692-11	15 k	2 W	metal oxide (nonflammable)
R717	1-202-585-11	3.3 k	½ W	composition
R718	1-206-692-11	15 k	2 W	metal oxide (nonflammable)
R801	1-213-146-11	1.8 k	1 W	metal oxide (nonflammable) (included in flyback transformer)
R901	⚠ 1-205-808-11	180	20 W	cement coated (nonflammable)
R903	1-217-184-11	8.2	20 W	wirewound (nonflammable)

⧓ : factory-selected value.

Ref. No.	Part No.	Description
RV201	1-224-642-XX	1 k, adjustable; V. AGC
RV301	1-224-644-XX	3.3 k, adjustable; ACC
RV302	1-224-642-XX	1 k, adjustable; HUE CENT
RV352	1-224-972-00	20 k, variable; COLOR
RV353	1-226-074-00	500, variable; HUE
RV354	1-226-078-00	10 k, cariable; BRIGHT
RV401	1-226-208-00	1 k, adjustable; SHARP
RV501	1-223-017-00	50, adjustable; H. CENT
RV502	1-224-646-XX	22 k, variable; V. HOLD
RV503	1-226-210-00	22 k, adjustable; V. SIZE
RV504	1-224-644-XX	4.7 k, adjustable; PIN AMP
RV601	⚠ 1-226-105-00	220, adjustable; 115 V ADJ
RV701	1-224-173-00	2 M, adjustable; SCRN
RV702	1-224-640-XX	330, adjustable; B. DRIVE
RV703	1-226-209-00	3.3 k, adjustable; B. BKG
RV704	1-224-640-XX	330, adjustable; G. DRIVE
RV705	1-226-209-00	3.3 k, adjustable; G. BKG
RV706	1-226-209-00	3.3 k, adjustable; R. BKG
RV901 S901	⚠ 1-226-079-00	50 k-A, variable; POWER PULL ON/VOLUME
RV902	1-224-259-XX	5 k, variable; PICTURE

MESCELLANEOUS

F601	⚠ 1-532-271-XX	Fuse, 4 A
F603	⚠ 1-532-536-00	Fuse, 1 A
J901	1-507-539-00	Jack, EARPHONE
NE901	1-519-108-XX	Lamp, neon; POWER
S301	1-552-340-00	Switch, rotaly; AUTO
S302	1-552-340-00	Switch, rotaly; AFT
S901		included in RV901
SG701–705	1-519-063-XX	Spark Gap
SP901	1-502-509-00	Speaker
V901	⚠ 8-737-901-05	Picture Tube, 250AKB22
X301	1-527-154-00	Crystal
	1-452-032-00	Magnet, disk; 10 mm dia
	1-452-060-21	Magnet, BMC
	1-452-094-00	Magnet, rotatable disk; 15 mm dia
	1-501-156-XX	Antenna, telescopic

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

Ref. No.	*Part No.*	*Description*
	1-526-086-XX	Socket, picture tube
	1-526-553-00	Cap, anode: included in flyback transformer
	1-533-146-00	Holder, Fuse
	1-534-630-00 1-534-872-00)	Coaxial Cable with Plug
	1-536-401-XX	Terminal Strip, 1L1
⚠	1-536-539-00	Terminal Board, antenna
	1-551-249-00	Coaxial Lable with Plug
⚠	1-551-286-12	Cord, power

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

PACKING MATERIALS AND ACCESSORIES

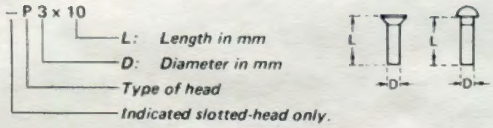
Part No.	*Description*
X-3701-031-0	Card Ass'y, warranty
Y-2063-103-0	Antenna, UHF loop (AN-15)
1-504-034-32	Earphone (ME-20B)
3-701-352-00	Bag, polyethylene
3-701-355-01	Lable, tack
3-701-730-00	Envelope, IBM card
4-328-921-00	Carton
4-328-922-00	Sheet, protection
4-328-923-00	Cushion, lower
4-328-924-00	Cushion, upper
4-491-213-21	Safety Tips
4-491-264-01	Basic Schematic Diagram
4-495-700-21	Manual, instruction
7-822-282-01	Card, IBM (white)
7-822-282-02	Card, IBM (pink)
7-822-282-03	Card, IBM (green)

1/4 WATT CARBON RESISTORS

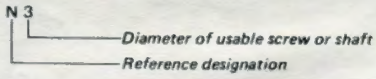
Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-244-601-11	10	1-244-625-11	100	1-244-649-11	1.0k	1-244-673-11	10 k	1-244-697-11	100k	1-244-721-11	1.0M	1-244-745-11
1.1	1-244-602-11	11	1-244-626-11	110	1-244-650-11	1.1k	1-244-674-11	11 k	1-244-698-11	110k	1-244-722-11	1.1M	1-244-746-11
1.2	1-244-603-11	12	1-244-627-11	120	1-244-651-11	1.2k	1-244-675-11	12 k	1-244-699-11	120k	1-244-723-11	1.2M	1-244-747-11
1.3	1-244-604-11	13	1-244-628-11	130	1-244-652-11	1.3k	1-244-676-11	13 k	1-244-700-11	130k	1-244-724-11	1.3M	1-244-748-11
1.5	1-244-605-11	15	1-244-629-11	150	1-244-653-11	1.5k	1-244-677-11	15 k	1-244-701-11	150k	1-244-725-11	1.5M	1-244-749-11
1.6	1-244-606-11	16	1-244-630-11	160	1-244-654-11	1.6k	1-244-678-11	16 k	1-244-702-11	160k	1-244-726-11	1.6M	1-244-750-11
1.8	1-244-607-11	18	1-244-631-11	180	1-244-655-11	1.8k	1-244-679-11	18 k	1-244-703-11	180k	1-244-737-11	1.8M	1-244-751-11
2.0	1-244-608-11	20	1-244-632-11	200	1-244-656-11	2.0k	1-244-680-11	20 k	1-244-704-11	200k	1-244-728-11	2.0M	1-244-752-11
2.2	1-244-609-11	22	1-244-633-11	220	1-244-657-11	2.2k	1-244 681-11	22 k	1-244-705-11	220k	1-244-729-11	2.2M	1-244-753-11
2.4	1-244-610-11	24	1-244-634-11	240	1-244-658-11	2.4k	1-244-682-11	24 k	1-244-706-11	240k	1-244-730-11	2.4M	1-244-754-11
2.7	1-244-611-11	27	1-244-635-11	270	1-244-659-11	2.7k	1-244-683-11	27 k	1-244-707-11	270k	1-244-731-11	2.7M	1-244-755-11
3.0	1-244-612-11	30	1-244-636-11	300	1-244-660-11	3.0k	1-244-684-11	30 k	1-244-708-11	300k	1-244-732-11	3.0M	1-244-756-11
3.3	1-244-613-11	33	1-244-637-11	330	1-244-661-11	3.3k	1-244-685-11	33 k	1-244-709-11	330k	1-244-733-11	3.3M	1-244-757-11
3.6	1-244-614-11	36	1-244-638-11	360	1-244-662-11	3.6k	1-244-686-11	36 k	1-244-710-11	360k	1-244-734-11	3.6M	1-244-758-11
3.9	1-244-615-11	39	1-244-639-11	390	1-244-663-11	3.9k	1-244-687-11	39 k	1-244-711-11	390k	1-244-735-11	3.9M	1-244-759-11
4.3	1-244-616-11	43	1-244-640-11	430	1-244-664-11	4.3k	1-244-688-11	43 k	1-244-712-11	430k	1-244-736-11	4.3M	1-244-760-11
4.7	1-244-617-11	47	1-244-641-11	470	1-244-665-11	4.7k	1-244-689-11	47 k	1-244-713-11	470k	1-244-737-11	4.7M	1-244-761-11
5.1	1-244-618-11	51	1-244-642-11	510	1-244-666-11	5.1k	1-244-690-11	51 k	1-244-714-11	510k	1-244-738-11	5.1M	1-244-762-11
5.6	1-244-619-11	56	1-244-643-11	560	1-244-667-11	5.6k	1-244-691-11	56 k	1-244-715-11	560k	1-244-739-11		
6.2	1-244-620-11	62	1-244-644 11	620	1-244-668-11	6.2k	1-244-692-11	62 k	1-244-716-11	620k	1-244-740-11		
6.8	1-244-621-11	68	1-244-645-11	680	1-244-669-11	6.8k	1-244-693-11	68 k	1-244-717-11	680k	1-244-741-11		
7.5	1-244-622-11	75	1-244-646-11	750	1-244-670-11	7.5k	1-244-694-11	75 k	1-244-718-11	750k	1-244-742-11		
8.2	1-244-623-11	82	1-244-647-11	820	1-244-671-11	8.2k	1-244-695-11	82 k	1-244-719-11	820k	1-244-743-11		
9.1	1-244-624-11	91	1-244-648-11	910	1-244-672-11	9.1k	1-244-696-11	91 k	1-244-720-11	910k	1-244-744-11		

HARDWARE NOMENCLATURE

Screw:



Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
		SCREWS	
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
		SELF-TAPPING SCREWS	
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
		SET SCREWS	
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
		NUT	
N		nut	
		WASHERS	
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
		RETAINING RINGS	
E		retaining ring	
G		grip-type retaining ring	

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